

Claims:

We claim:

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1. A method of operating a wireless control system using wireless communications wherein the wireless communications comprise a plurality of channels and are shared between a plurality of wireless communication devices, the method comprising:

- 5 generating and transmitting a first control message that allows first access to one of the channels for one of the wireless communication devices;
- receiving a termination message indicating termination of the first access;
- processing the termination message to determine an amount of time for a second access to the one of the channels for the one of the wireless
- 10 communication devices; and
- generating and transmitting a second control message that allows the second access and indicates the amount of time.

15 2. The method of claim 1 wherein the wireless control system comprises an upstream manager.

3. The method of claim 1 wherein the first control message comprises a credit.

20 4. The method of claim 1 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

5. The method of claim 1 wherein the wireless communication devices comprise wireless broadband routers.

25 6. The method of claim 1 wherein the termination message indicates a number of packets remaining to be transmitted.

7. The method of claim 1 wherein the termination message indicates a number of bytes remaining to be transmitted.

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8. A software product for operating a wireless control system using wireless communications wherein the wireless communication comprises a plurality of channels and are shared between a plurality of wireless communication devices, the software product comprising:

5 wireless control system software operational when executed by a processor to direct the processor to generate and transmit a first control message that allows first access to one of the channels for one of the wireless communication devices, receive a termination message indicating termination of the first access, process the termination message to determine an amount of
10 time for a second access to the one of the channels for the one of the wireless communication devices, and generate and transmit a second control message that allows the second access and indicates the amount of time; and

 a software storage medium operational to store the wireless control system software.

15 9. The software product of claim 8 wherein the wireless control system comprises an upstream manager.

20 10. The software product of claim 8 wherein the first control message comprises a credit.

 11. The software product of claim 8 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

25 12. The software product of claim 8 wherein the wireless communication devices comprise wireless broadband routers.

 13. The software product of claim 8 wherein the termination message indicates a number of packets remaining to be transmitted.

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14. The software product of claim 8 wherein the termination message indicates a number of bytes remaining to be transmitted.

15. A wireless control system using wireless communications wherein the wireless communications comprise a plurality of channels and are shared between a plurality of wireless communication devices, the wireless control system comprising:

a processor configured to generate and transmit a first control message that allows first access to one of the channels for one of the wireless communication devices, receive a termination message indicating termination of the first access, process the termination message to determine an amount of time for a second access to the one of the channels for the one of the wireless communication devices, and generate and transmit a second control message that allows the second access and indicates the amount of time; and

an interface configured to transfer the first control message from the processor to the one of the wireless communication devices, transfer the termination message from the one of the wireless communication devices to the processor, and transfer the second control message from the processor to the one of the wireless communication devices.

16. The wireless control system of claim 15 wherein the wireless control system comprises an upstream manager.

17. The wireless control system of claim 15 wherein the first control message comprises a credit.

18. The wireless control system of claim 15 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

19. The wireless control system of claim 15 wherein the wireless communication devices comprise wireless broadband routers.

20. The wireless control system of claim 15 wherein the termination message indicates a number of packets remaining to be transmitted.

5 21. The wireless control system of claim 15 wherein the termination message indicates a number of bytes remaining to be transmitted.

22. A method of operating a wireless control system using wireless communications wherein the wireless communications comprise a plurality of channels and are shared between a plurality of wireless communication devices, the method comprising:

selecting one of the wireless communication devices from a queue of the wireless communication devices;

generating and transmitting a first control message that allows first access to one of the channels for the one of the wireless communication devices;

receiving a termination message indicating termination of the first access;

processing the termination message to determine an order of the wireless communication devices; and

modifying the queue based on the order.

23. The method of claim 22 wherein the wireless control system comprises an upstream manager.

24. The method of claim 22 wherein the first control message comprises a credit.

25. The method of claim 22 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

26. The method of claim 22 wherein the wireless communication devices comprise wireless broadband routers.

27. The method of claim 22 wherein the termination message indicates a number of packets remaining to be transmitted.

28. The method of claim 22 wherein the termination message indicates a number
5 of bytes remaining to be transmitted.

29. A software product for operating a wireless control system using wireless communications wherein the wireless communications comprise a plurality of channels and are shared between a plurality of wireless communication devices:
10 wireless control system software operational when executed by a processor to direct the processor to select one of the wireless communication devices from a queue of the wireless communication devices, generate and transmit a first control message that allows first access to one of the channels for the one of the wireless communication devices, receive a termination message
15 indicating termination of the first access, process the termination message to determine an order of the wireless communication devices, and modify the queue based on the order; and
a software storage medium operational to store the wireless control system software.

30. The software product of claim 29 wherein the wireless control system comprises an upstream manager.

31. The software product of claim 29 wherein the first control message comprises
25 a credit.

32. The software product of claim 29 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

33. The software product of claim 29 wherein the wireless communication
30 devices comprise wireless broadband routers.

34. The software product of claim 29 wherein the termination message indicates a number of packets remaining to be transmitted.

5 35. The software product of claim 29 wherein the termination message indicates a number of bytes remaining to be transmitted.

36. A wireless control system using wireless communications wherein the wireless communications comprise a plurality of channels and are shared
10 between a plurality of wireless communication devices, the wireless control system comprising:
a processor configured to select one of the wireless communication devices from a queue of the wireless communication devices, generate and transmit a first control message that allows first access to one of the channels for
15 the one of the wireless communication devices, receive a termination message indicating termination of the first access, process the termination message to determine an order of the wireless communication devices, and modify the queue based on the order; and
an interface configured to transfer the first control message from the
20 processor to the one of the wireless communication devices and transfer the termination message from the one of the wireless communication devices to the processor.

37. The wireless control system of claim 36 wherein the wireless control system
25 comprises an upstream manager.

38. The wireless control system of claim 36 wherein the first control message comprises a credit.

30 39. The wireless control system of claim 36 wherein the wireless communications are in a Multichannel Multipoint Distribution Service (MMDS) frequency range.

40. The wireless control system of claim 36 wherein the wireless communication devices comprise wireless broadband routers.

5 41. The wireless control system of claim 36 wherein the termination message indicates a number of packets remaining to be transmitted.

42. The wireless control system of claim 36 wherein the termination message indicates a number of bytes remaining to be transmitted.

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